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ABSTRACT

This report focuses on productivity improvements in instructional programs at Illinois' public universities by providing an assessment of statewide instructional capacity. The report identifies 22 disciplines in which reduction, consolidation, or elimination of programs should be considered. It notes that when programs are offered by several universities, consideration should be given to reducing the number of programs or consolidating programs. This recommendation is made because statewide analysis across disciplines confirms the existence of programs in several disciplines showing low enrollment, particularly at the graduate level. From a statewide perspective, it is believed that the capacity of professional and occupational programs should be adjusted to be consistent with the occupational opportunities available to graduates. Based on this statewide analysis, the report concludes that there are a number of significant program reductions and eliminations possible that, when completed, can help to achieve productivity improvements in Illinois' public universities and colleges. (GLR)

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ED 365 279

Item #2
September 3, 1992

STATE OF ILLINOIS
BOARD OF HIGHER EDUCATION

STATEWIDE ANALYSIS OF THE PRODUCTIVITY OF INSTRUCTIONAL UNITS AT PUBLIC UNIVERSITIES

The Illinois Board of Higher Education, meeting as a Committee of the Whole, is examining the priorities, quality, and productivity of Illinois higher education. At the May 1992 meeting, guidelines for making productivity improvements were reviewed. The guidelines address five key areas: instruction, research and public service, overall academic functions, administrative functions, and state policies affecting higher education. Parallel processes for applying these guidelines in making productivity improvements have been initiated at both the state and institutional levels.

This report focuses on productivity improvements in instructional programs at public universities. In May 1992, a statewide quantitative analysis of instructional programs at public universities and community colleges was presented to the Board that paralleled the guidelines for making productivity improvements at the institutional level. This analysis examined selected quantitative measures of student demand, degree production, costs, and centrality of academic programs across disciplines and levels of instruction at public universities. These measures are provided in Tables 1 through 3.

This report provides the results of the staff's further assessment of statewide capacity in instruction at public universities and identifies fields of study in which reduction, consolidation, or elimination of programs should be considered. The first step in this assessment was the identification of disciplines in which reduction of statewide capacity should be considered. Disciplines were selected on the basis of quantitative measures shown in Tables 1 through 3, as well as on qualitative information drawn from reviews of programs during the last decade. For example, the statewide analysis across disciplines shows that programs in some fields are characterized by high costs. When programs in these disciplines are offered by several universities, consideration should be given to reducing the number of programs or consolidating programs in order to provide instruction more cost-effectively. The statewide analysis across disciplines also shows that programs in several disciplines are characterized by low enrollment, particularly at the graduate level. In addition to concerns about the cost-effectiveness of low enrollment programs, concerns frequently arise in program review about the ability of these programs to sustain the breadth and depth of advanced coursework needed to support high quality graduate study. From a statewide perspective, the capacity of professional and occupational programs should be adjusted to be consistent with the occupational opportunities available to graduates.

The next step in this process will be to identify specific programs in each of the fields of study described in this report that should be considered for reduction, consolidation, or elimination. In addition to measures of cost, demand, and size, consideration will be given to the missions of individual institutions, geographic access to programs, and the results of individual program reviews. Finally, the statewide analysis will be brought together with the campus analyses and, in consultation with systems and campuses, specific instructional programs will be identified within each discipline that will be reduced, consolidated, or eliminated. It is expected that these program changes will be initiated during fiscal year 1993 and will be completed within a three-year period. As the productivity initiative proceeds in the coming year, additional program reductions or consolidations will be identified for fiscal year 1994 and beyond.

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Liberal Arts and Social Sciences

English, Literature, and Speech. Four public universities offer doctoral programs and a fifth offers an advanced certificate program in English. These programs are characterized by moderate demand and low costs. However, concerns have been identified in program reviews about completion rates and the subsequent achievement of graduates. Doctoral study in this field can be strengthened by elimination of weaker programs, and adequate access to doctoral study can be maintained in stronger programs.

Foreign Languages. Ten universities offer baccalaureate programs in foreign languages and five universities offer master's programs, all with low student demand but moderate to low costs. Institutions may justify these programs because of the need to maintain undergraduate programs and support the general education curriculum. However, concerns about the ability to sustain quality in small programs at the upper-division and graduate levels across several languages have been noted in the reviews of several programs. At three of the five campuses, fewer than 20 students in total are enrolled in master's programs in foreign languages. While undergraduate coursework in foreign languages should be maintained, the number of baccalaureate and master's degree programs in foreign languages should be reduced.

Religion and Philosophy. Nine universities offer baccalaureate programs, five universities offer master's programs, and three offer doctoral programs in philosophy and religion. Demand and degree production are low across all levels. At six universities, fewer than 30 undergraduate and graduate students are enrolled in programs in these disciplines. Statewide, enrollment in the five master's and three doctoral programs were 17 and 19 respectively in fall 1990. Statewide capacity in undergraduate and graduate education in religion and philosophy should be reduced through elimination of programs at both levels.

Visual and Performing Arts. Eleven public universities offer master's programs in the visual and performing arts, and two universities offer programs at the doctoral level. Programs are available in art, theater, film and photography, music, and dance. Between fall 1986 and 1990, enrollment in most graduate programs declined, with several programs enrolling fewer than ten students. Master's programs collectively fall within the moderate range on measures of demand, degree production, costs and centrality, although costs are high in music programs. Statewide capacity in graduate programs in the visual and performing arts should be reduced by eliminating master's programs in this field.

Area Studies. There are five master's programs in area studies offered by public universities that are characterized by low demand, low degree production, and high costs. However, these programs focus on different ethnic or world regions and are not duplicative. Five universities offer ten baccalaureate programs in area and ethnic studies, and the statewide analysis shows low student demand, low degree production, and moderate costs. Although these programs contribute to general education curricula, concerns have been identified in program reviews about the ability of programs with very few majors to sustain quality in upper-division baccalaureate studies. Statewide capacity in baccalaureate degree programs in area studies should be reduced.

Communications. Ten campuses offer undergraduate programs in communications with overall high demand. Eight universities offer master's programs with relatively low demand, and two universities offer doctoral programs with low demand. Costs are relatively low across all levels. The number of baccalaureate degrees awarded increased 34 percent during the 1980s. However, there is a notable mismatch between student interest in this field and occupational opportunities in communications. Although growth is expected in some communications occupations, the number of graduates annually exceeds the number of job openings, and competition for positions is keen. Enrollment levels in baccalaureate communications programs should be reduced at all universities in order to be more consistent with occupational opportunities available to graduates, and statewide capacity in graduate education should be reduced.

Psychology. Five universities offer doctoral programs in psychology. The statewide analysis shows low demand and high costs in these programs. The number of doctoral degrees conferred in this field increased over 40 percent during the 1980s, but employment opportunities have not kept pace with this growth. The number of doctoral programs in psychology should be reduced.

Social Sciences. All 12 public universities offer at least one master's degree program in the social sciences. Enrollment in most programs has been stable or shown moderate growth. Overall, costs are moderate although there are some notable exceptions. There is no indication that economies of scale are realized with larger programs or the presence of multiple, related programs. Five universities offer two or more doctoral programs in the social sciences, with moderate demand and costs. At both the master's and doctoral levels, concerns about low and declining enrollment have been identified. At the doctoral level, reviews of programs in the social sciences have raised concerns about the ability to sustain high quality instruction when enrollment is low or declining. Statewide capacity in graduate education in the social sciences should be reduced with the elimination of programs at both the master's and doctoral levels.

Sciences and Mathematics

Life Sciences. All 12 public universities offer master's programs in life sciences. These programs have high costs and relatively low demand. Unit costs for programs in general biology were examined to see if economies of scale were present on campuses with high enrollment or multiple, related programs. With few exceptions, the unit costs of biology programs at institutions with multiple programs, including doctoral programs, are consistently higher than the costs of master's programs at universities with limited offerings in these fields. Unit costs in the largest programs in general biology are generally at or above the state averages. It may be that the costs of supporting research at universities offering multiple programs and doctoral study offset any economies of scale that might be realized from larger enrollments or the presence of mutually supportive programs. In the absence of any indication that small, singular programs are less cost effective, productivity improvements in graduate-level science programs need to focus on groups of programs in each discipline and the viability of individual programs based on program review.

Eleven universities offer master's programs in general biology. Enrollment in these programs increased 16 percent between 1986 and 1990, and ranges from 21 to 75. Although there appears to be adequate demand to sustain these programs, reviews raised concerns about the costs of these programs, the breadth of specializations offered in some small master's programs, and about the ability of small programs to sustain quality across several specializations. Although baccalaureate programs in biology generally have moderate demand and moderate costs, concerns about small, specialized programs parallel concerns for master's programs.

Five universities offer doctoral programs in the biological sciences. Total enrollment declined about 15 percent between 1986 and 1990, with nearly all programs experiencing some enrollment decline. Two universities have neither a cluster of related doctoral programs or specific research or instructional missions in this or related fields. At a third university, costs are significantly above average in several programs.

Statewide capacity in undergraduate and graduate programs in the life sciences should be reduced through the elimination of programs at each level. Universities should also reduce costs in doctoral programs in the biological sciences, possibly through better utilization of the resources of schools of medicine.

Mathematics. Five universities offer doctoral programs in mathematics. Statewide enrollment in these programs increased about 14 percent between 1986 and 1990. However, the costs of doctoral programs are high, and completion rates are exceptionally low. Enrollments at two public universities are low. The number of doctoral programs in mathematics should be reduced.

Physical Sciences. As with the biological sciences, there is no indication that economies of scale are present at universities that offer an array of programs in the physical sciences. All public universities offer bachelor's degree programs in the physical sciences. These programs generally have high costs, low demand, and low degree production. The number of degrees conferred in these programs declined over 25 percent during the 1990s.

Ten public universities offer master's programs in chemistry. Statewide enrollment increased about 25 percent between 1986 and 1990, with enrollment at individual universities ranging from nine to 106. Three universities offer programs for fewer than 20 students. Seven universities offer programs in physics, with total enrollment increasing about 24 percent between 1986 and 1990. Physics programs at four universities enroll fewer than 20 students. Four universities offer doctoral programs in the physical sciences.

Unlike the other physical sciences, total enrollment in geology programs declined 44 percent between 1986 and 1990. Unit costs are high at both the master's and doctoral levels. At the master's level, costs average almost twice the cost per credit hour of other physical sciences.

Statewide capacity in undergraduate and graduate programs in the physical sciences should be reduced. One or more programs in chemistry and physics should be eliminated at both the baccalaureate and master's levels, with priority given to maintaining those programs that support programs in related fields and professions. One or more programs in geology at both the master's and doctoral levels should be eliminated.

Business

Doctoral programs in business are offered by three public universities. Although total enrollment in these programs increased 32 percent between 1986 and 1990, these programs are among the most costly of all doctoral programs. Average annual costs in doctoral business programs average almost $10,100 per full-time-equivalent (FTE) major. Two universities offer doctoral programs in accountancy which averaged almost $19,000 per FTE major in 1988-89, over twice the average cost of all doctoral programs statewide. In addition to the two accounting programs, there is some duplication of programs in specialized areas of business. Because of the high cost of doctoral programs in business, duplicated programs should be consolidated or eliminated.

Although baccalaureate programs in business generally have high demand and low costs, several universities offer specialized programs. In general, specialized programs in business limit the employment options available to graduates. Program reviews have found that some of these programs have become outdated or have not achieved their objectives. These programs should be eliminated. Eleven of the 12 universities offer master's programs in business which generally have high demand and low costs. At some institutions, however, these programs draw resources from higher priority undergraduate programs and should be eliminated.

Education

All public universities offer programs in education, with approximately 13 percent of the students attending public universities enrolled in education programs. In general, programs in education show moderate to high demand, and costs are moderate. The number of degrees awarded at all levels remained stable or increased slightly during the 1980s. Seven of the public universities were originally established as "normal schools," and the preparation of teachers continues to be a significant part of their missions.

To promote the professional development of practicing teachers, most Illinois school districts provide salary incentives to teachers to pursue graduate coursework. Therefore, master's programs

in education have proliferated at both public and private institutions, and a significant proportion of off-campus offerings across the state are in this field.

From a statewide perspective, there are three issues to be considered in reviewing education programs. First, baccalaureate teacher preparation programs are producing an excess of graduates in some fields, while shortages exist in others. According to the Illinois State Board of Education, there is an inadequate supply of new teachers in early childhood, special education, English as a second language and bilingual education, and secondary teachers in chemistry, physics, and physical science. Education programs, both general and specialized, should be maintained and strengthened at institutions that have a specific mission to support teacher preparation and professional development. These institutions should increase capacity and extend access to specialized programs, such as special education, providing preparation in fields in which shortages have been identified.

Second, almost all public universities offer a broad array of specialized programs in education. At the graduate level, several specialized programs in teaching in certain fields, such as foreign languages, music, agriculture, and art, have low enrollments and high costs. All institutions should reduce enrollments or eliminate programs in fields for which there is little or no demand. Specialized programs should be reduced or eliminated at institutions that do not have a specific mission to provide teacher preparation and professional development programs.

Third, because of the salary incentives for graduate coursework, teachers represent a substantial market for off-campus offerings. General concerns exist about the quality and coherence of graduate coursework for teachers and the extent to which the professional objectives of teachers and the needs of schools are served by off-campus offerings. In addition, there are concerns about the duplication and the cost-effectiveness of delivery of off-campus coursework for teachers by public universities. All 12 public universities offer off-campus courses in education. In one suburban Chicago community college district, seven of the 12 public universities provided education coursework during the 1989-90 academic year. All of the suburban districts are served by two or more public universities. Two or more public universities provide courses in 48 cities and towns and, in 17 of these communities, courses in the same subfield were offered by more than one university. In addition, some institutions provide coursework at sites far distant from their home campuses, including offering courses off-campus in the home city of another public university.

Off-campus offerings in education should be reduced. Small programs, programs with inadequate support, and programs associated with weak on-campus programs should be eliminated. The off-campus offerings of public universities should be coordinated through regional higher education consortia and the Regional Educational Service Centers. In general, each public university should limit off-campus offerings in education to locations within its specific service region.

Occupational and Professional Programs

Engineering. The statewide review of programs in engineering presented to the Board in July 1992 found that a number of statewide priorities in engineering education were not being achieved. The report concluded that highest priority should be given to improving the quality of baccalaureate programs and to increasing opportunities for women and minorities in this field. Also, enrollment in doctoral programs should be reduced and resources redirected to undergraduate programs. The report also found an imbalance between the number of graduates and occupational demand in several engineering fields. It was recommended that enrollments in baccalaureate programs in civil, industrial, and mechanical engineering be increased. On the other hand, the report recommended that programs at all levels in aeronautical engineering should be reduced and that unique programs in agricultural engineering, bioengineering, mining engineering, and nuclear engineering should be examined to assure that each is meeting the educational preparation, research, and public service needs of industry.

Technology. Seven public universities offer baccalaureate programs and three offer master's programs in engineering technology and related fields. In most cases, these programs arose from vocational education programs rather than engineering programs. Baccalaureate degree programs have moderate costs and student demand, while master's programs have low demand and low costs. Program reviews have identified concerns about occupational demand, placement of graduates, and the adequacy of resources allocated to support these programs. Statewide capacity in technology programs should be reduced.

Health Professions. All 12 public universities offer two or more programs in health sciences or allied health fields. Enrollment by campus is low to moderate, and costs are high across all levels. Eight universities offer programs in speech pathology and medical technology, six offer programs in nursing, and four offer programs in health services administration. All other health programs are available only at one or two campuses. Medical schools are located at two universities that have specific missions to provide education in the health professions. Several other universities have specific, but more limited, roles in providing programs in the health fields to meet local or regional needs. The broad distribution of health programs and the high costs shown in the statewide analysis indicate that productivity improvements could be realized by consolidating programs at selected campuses with specific missions in health education.

Law. Three public universities and six private institutions offer first-professional degree programs in law in Illinois. In 1990, 1,200 students were enrolled in the law schools of public universities. In Illinois and nationally, the number of law school graduates exceeds the number of job openings and this imbalance is predicted to continue in the coming decade. Costs of first professional law programs are high compared to post-baccalaureate programs in other fields. Statewide capacity in this field should be reduced so that resources can be reallocated to higher priority programs and so that educational opportunities are consistent with the occupational opportunities available in the state.

Public Affairs and Social Work. Public affairs and social work programs are offered by nine public universities at the bachelor's level, seven at the master's, and three at the doctoral level. Demand is relatively low at the baccalaureate level and moderate at graduate levels. Costs are low to moderate. Competition for occupational opportunities in these fields in Illinois is keen and employment in these fields, particularly in public administration, is affected by changes in government spending at both the state and federal levels. Duplication of programs in these fields should be reduced with priority given to maintaining programs at universities with strong programs and a missions emphasis in public affairs.

Agriculture and Forestry. Bachelor's degree programs in agribusiness/agricultural production, and agricultural sciences are offered by four public universities. These programs are characterized by moderate demand and high costs. Statewide, the number of baccalaureate degrees granted in agricultural sciences programs declined significantly (52 percent) during the 1980s, while degrees in agribusiness and production remained stable. Although the number of master's degrees conferred declined 25 percent in the last ten years, doctoral degrees increased about 50 percent. Occupational opportunities for agricultural scientists declined significantly in the last decade and are projected to grow at less than half the rate of other occupations during the 1990s. Three universities provide master's programs, and one university offers doctoral programs, in these fields. Two universities offer an array of programs, including some small, high cost programs, in such areas as food science, animal sciences, agricultural economics, and soil science.

Two universities offer bachelor's and master's degree programs in forestry. Both master's programs are small and have high costs. Forestry is one of the few occupational fields in which the actual number of jobs is expected to contract during the 1990s in Illinois.

Statewide capacity in baccalaureate programs in agricultural sciences should be reduced. At graduate levels, capacity should be reduced and duplication of programs in agriculture eliminated. Statewide capacity in graduate programs in forestry should be reduced.

Home Economics. Seven public universities offer programs in home economics. This classification traditionally encompasses five areas: general home economics, consumer economics, foods and nutrition, family and child studies, and clothing and textiles. All areas, except clothing and textiles, experienced enrollment growth between 1986 and 1990, with over half of all home economics students enrolled in general home economics programs. There are several very small, specialized graduate programs, several of which have experienced significant enrollment declines. There do not appear to be economies of scale at institutions with several programs in this field. The number of small, specialized programs in home economics, particularly at the graduate level, should be reduced.

Recreation and Fitness Studies. Recreation and leisure programs are offered by eight public universities at the bachelor's level and five at the master's level. Student demand is low across all levels, and costs are moderate. Employment opportunities, particularly at the graduate level, have not kept pace with the growth in programs. Statewide capacity in these programs should be reduced to be consistent with student interests and occupational demand.

Individualized Programs. Individualized degree programs are offered by several universities. Although these programs are designed to meet the unique needs of students, reviews have raised concerns about the quality and effectiveness of these programs. These programs should be examined and low quality programs eliminated.

Summary and Conclusions.

This report provides a statewide perspective on the productivity of instructional programs at public universities. This analysis identifies 22 disciplines in which programs should be consolidated, reduced, or eliminated and shows that substantial and significant program reductions and eliminations can be undertaken in order to achieve productivity improvements in instruction. Through these productivity improvements institutions will be able to reinvest resources to support their highest priorities.

While this report has focused on instructional programs, as universities make productivity improvements, highest priority should be given to maintaining and strengthening the quality of instructional programs and to providing adequate access to them. Universities should emphasize reducing costs in public service and research, administration, and support functions and eliminating duplicate and non-essential services and activities. In order to reinvest in instructional programs of the highest priority, however, reallocation from programs of lesser priority will also be required.

Table 1
SELECTED MEASURES
BACHELOR'S DEGREE PROGRAMS
(Average 1988 to 1990)

	Number of Campuses	Number of Programs	Demand by Campus: FTE Majors Per Campus	Rating*	Demand by Program: FTE Majors Per Program	Rating*	Degree Production: Degrees Per Program	Rating*	Costs: Per FTE Major	Rating*	Centrality: Percent Hours by Non-Major	Rating*
Liberal Arts & Social Sciences												
English, Literature & Speech	12	23	452	Mod	236	High	68	High	$2,208	Low	89.3	High
Foreign Language & Literature	10	42	101	Low	24	Low	6	Low	$2,327	Mod	92.2	High
Philosophy & Religion	9	11	27	Low	22	Low	5	Low	$2,341	Mod	96.9	High
Visual & Performing Arts	12	60	482	Mod	96	Mod	18	Low	$2,862	Mod	70.2	Mod
Area & Ethnic Studies	5	10	16	Low	8	Low	3	Low	$2,682	Mod	97.4	High
Communications	10	18	494	Mod	275	High	53	Mod	$2,247	Low	68.7	Mod
Psychology	12	12	405	Mod	405	High	99	High	$2,142	Low	70.0	Mod
Social Sciences	12	65	785	High	145	Mod	43	Mod	$2,199	Low	82.0	Mod
Sciences & Mathematics												
Life Sciences	12	28	412	Mod	176	Mod	38	Mod	$2,949	Mod	81.9	Mod
Mathematics	11	16	184	Low	126	Mod	24	Mod	$2,455	Mod	94.5	High
Physical Sciences	12	34	168	Low	59	Low	11	Low	$3,029	High	92.2	High
Business												
Accounting	10	10	431	Mod	431	High	130	High	$2,287	Mod	59.2	Mod
Business	12	51	1,629	High	383	High	86	High	$1,949	Low	68.4	Mod
Education												
Education-All	12	101	1,145	High	136	Mod	35	Mod	$2,561	Mod	69.8	Mod
Education-Teach Training by Level	11	22	617	Mod	309	High	78	High	$2,503	Mod	32.5	Low
Education-Teach Training by Subject	10	67	434	Mod	65	Low	21	Low	$2,755	Mod	74.6	Mod
Education-other	9	12	289	Mod	217	Mod	35	Mod	$2,391	Mod	69.8	Mod
Occupational & Professional												
Architecture & Urban Planning	2	4	621	High	311	High	58	High	$3,298	High	16.8	Low
Computer Science	10	10	381	Mod	381	High	60	High	$2,534	Mod	71.8	Mod
Engineering	5	40	1,844	High	231	Mod	47	Mod	$3,757	High	40.9	Low
Engineering Tech.	7	11	323	Mod	206	Mod	97	High	$2,829	Mod	42.4	Low
Health Professions & Services	11	35	217	Low	68	Low	27	Mod	$3,097	High	29.5	Low
Nursing	6	6	230	Mod	230	Mod	97	High	$5,490	High	4.3	Low
Criminal Justice & Fire Science	8	9	358	Mod	318	High	81	High	$2,020	Low	34.3	Low
Legal Studies/Law	2	2	93	Low	93	Mod	27	Mod	$2,310	Mod	74.6	Mod
Public Affairs & Social Work	9	10	97	Low	87	Mod	26	Mod	$2,633	Mod	36.0	Low
Agriculture & Environmental Science	5	23	419	Mod	91	Mod	23	Mod	$3,324	High	61.8	Mod
Home Economics	7	17	395	Mod	163	Mod	40	Mod	$2,295	Mod	56.8	Low
Recreation & Fitness Studies	8	9	301	Low	90	Mod	35	Mod	$2,572	Mod	53.4	Low
Other												
Individual Studies	12	19	147	Low	93	Mod	51	Mod	$2,580	Mod	na	na
Multi/Interdisciplinary	4	4	316	Mod	316	High	75	High	$1,709	Low	82.6	High
Other	3	4	513	Mod	385	High	74	High	$2,952	High	39.9	Low
Average			459		194		50		$2,648		65.2%	
Lowest			16		8		3		$1,709		4.3%	
Middle 50 Percent			230-617		87-231		23-53		$2,289-$2,949		59%-82%	
Highest			1,844		405		130		$5,490		97.4%	

* Approximately 50 percent of the programs fall within the moderate range on each measure.

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Table 2
SELECTED MEASURES
MASTER'S DEGREE PROGRAMS
(Average 1988 to 1990)

	Number of Campuses	Number of Programs	Demand by Campus: FTE Majors Per Campus	Rating*	Demand by Program: FTE Majors Per Program	Rating*	Degree Production: Degrees Per Program	Rating*	Costs: Per FTE Major	Rating*	Centrality: Percent Hours by Non-Major	Rating*
Liberal Arts & Social Sciences												
English, Literature & Speech	12	22	60	Mod	32	Mod	13	Mod	$4,557	Mod	36	Mod
Foreign Language & Literature	6	20	20	Low	6	Low	7	Low	$5,269	Mod	66	High
Philosophy & Religion	5	5	11	Low	11	Low	5	Low	$6,439	Mod	39	Mod
Visual & Performing Arts	11	36	91	Mod	28	Mod	9	Mod	$6,046	Mod	26	Mod
Area & Ethnic Studies	3	5	19	Low	12	Low	6	Low	$7,732	High	61	High
Communications	8	12	45	Low	30	Mod	12	Mod	$4,135	Low	20	Mod
Psychology	12	12	59	Mod	59	High	16	Mod	$4,584	Mod	34	Mod
Social Sciences	12	52	89	Mod	21	Mod	7	Low	$5,351	Mod	43	High
Sciences & Mathematics												
Life Sciences	12	32	55	Low	21	Mod	7	Low	$7,293	High	34	Mod
Mathematics	11	15	41	Low	30	Mod	13	Mod	$4,837	Mod	55	High
Physical Sciences	10	27	54	Low	20	Low	8	Mod	$9,053	High	32	Mod
Business												
Business	11	20	225	High	124	High	53	High	$4,206	Low	15	Low
Accounting	7	7	34	Low	34	Mod	16	Mod	$5,859	Mod	19	Low
Education												
Education-All	12	83	158	Mod	23	Mod	9	Mod	$5,448	Mod	36	Mod
Education-Teach Training by Level	6	10	123	Mod	74	High	38	High	$3,587	Low	48	High
Education-Teach Training by Subject	10	52	111	Mod	21	Mod	12	Mod	$4,450	Mod	38	Mod
Education-other	12	54	287	High	64	High	28	High	$3,341	Low	32	Mod
Occupational & Professional												
Architecture & Urban Planning	2	5	260	High	104	High	35	High	$5,957	Mod	5	Low
Computer Science	6	7	66	Mod	56	High	24	High	$5,240	Mod	50	High
Engineering	5	33	244	High	37	Mod	17	High	$8,010	High	10	Low
Engineering Tech.	3	3	36	Low	36	Mod	7	Low	$4,243	Low	38	Mod
Health Professions & Services	10	40	196	Mod	49	High	9	Mod	$8,511	High	13	Low
Nursing	4	7	72	Mod	41	Mod	23	High	$9,479	High	13	Low
Criminal Justice & Fire Science	5	5	30	Low	30	Mod	16	Mod	$4,468	Mod	19	Low
Legal Studies/Law	2	3	772	High	515	High	11	Mod	$5,253	Mod	2	Low
Public Affairs & Social Work	7	12	130	Mod	76	High	40	High	$3,867	Low	19	Low
Agriculture & Environmental Science	5	16	56	Mod	18	Low	10	Mod	$7,219	Mod	40	High
Home Economics	5	13	40	Low	15	Low	6	Low	$5,574	Mod	32	Mod
Recreation & Fitness Studies	5	6	15	Low	12	Low	17	High	$6,124	Mod	24	Mod
Other												
Individual Studies	1	1	61	Mod	61	High	10	Mod	$3,047	Low	na	High
Multi/Interdisciplinary	4	4	57	Mod	57	High	4	Low	$4,819	Mod	77	High
Other	4	8	62	Mod	31	Mod	na		$4,157	Low	na	
Average			111		56		16		$5,200		32%	
Lowest			11		515		4		$3,047		77%	
Middle 50 percent			55-196		21-41		8-16		$4,450-$7,219		20%-38%	
Highest			772		515		53		$9,479		2%	

* Approximately 50 percent of the programs fall within the moderate range on each measure.

Table 3
SELECTED MEASURES
ADVANCED CERTIFICATE AND DOCTORAL PROGRAMS
(Average 1988 to 1990)

	Number of Campuses	Number of Programs	Demand by Campus: FTE Majors Per Campus	Rating*	Demand by Program: FTE Majors Per Program	Rating*	Degree Production: Degrees Per Program	Rating*	Costs: Per FTE Major	Rating*	Centrality: Percent Hours by Non-Major	Rating*
Liberal Arts & Social Sciences												
English, Literature & Speech	5	8	78	Mod	49	High	6	Mod	$5,930	Low	9	Mod
Foreign Languages & Literature	2	8	45	Low	11	Low	3	Low	$6,194	Low	49	High
Philosophy & Religion	3	3	20	Low	20	Low	2	Low	$8,449	Mod	17	Mod
Visual & Performing Arts	2	5	90	Mod	36	Mod	4	Low	$8,820	High	24	High
Communications	2	2	28	Low	28	Mod	5	Mod	$4,850	Low	10	Mod
Psychology	7	8	45	Low	40	Mod	8	Mod	$8,904	High	12	Mod
Social Sciences	5	19	110	Mod	29	Mod	4	Low	$8,490	Mod	26	High
Sciences & Mathematics												
Life Sciences	5	26	143	High	27	Mod	4	Low	$6,913	Mod	5	Mod
Mathematics	5	8	60	Mod	38	Mod	3	Low	$8,821	High	25	High
Physical Sciences	4	14	242	High	69	High	8	Mod	$8,727	Mod	5	Mod
Business												
Accounting	2	2	25	Low	25	Mod	3	Low	$18,787	High	12	Mod
Business	3	10	55	Low	16	Low	2	Low	$10,099	High	28	High
Education												
Education-All	8	53	198	High	30	Mod	5	Mod	$7,861	Mod	12	Mod
Education-Teaching by Level	1	4	136	Mod	34	Mod	8	Mod	$6,400	Mod	3	Low
Education-Teaching by Subject	4	12	68	Mod	23	Low	5	Mod	$6,700	Mod	16	Mod
Education-Other	8	38	111	Mod	23	Low	8	Mod	$6,327	Mod	13	Mod
Occupational & Professional												
Architecture & Urban Planning	1	1	13	Low	13	Low	2	Low	$11,685	High	34	High
Computer Science	1	1	240	High	240	High	28	High	$6,683	Mod	15	Mod
Engineering	2	23	823	High	72	High	8	Mod	$7,978	Mod	4	Low
Health Professions & Services	3	10	53	Low	16	Low	3	Low	$18,422	High	21	High
Nursing	1	1	81	Mod	81	High	13	High	$11,082	High	1	Low
Legal Studies/Law	1	1	2	Low	2	Low	1	Low	$10,888	High	39	High
Public Affairs & Social Work	3	4	127	Mod	96	High	6	Mod	$4,655	Low	2	Low
Agriculture & Environmental Science	1	6	311	High	52	High	8	Mod	$6,363	Mod	8	Mod
Home Economics	1	2	28	Low	14	Low	2	Low	$7,404	Mod	28	High
Recreation & Fitness Studies	1	2	24	Low	12	Low	7	Mod	$10,214	High	2	Low
Other												
Multi/Interdisciplinary Studies	1	1	<1	Low	<1	Low	1	Low	$5,410	Low	na	
Other	na	na	na		na		na		$8,545	Mod	na	
Average			114		41		6		$8,575		16%	
Lowest			<1		<1		1		$4,655		1%	
Middle 50 percent			60-136		25-40		5-8		$6,327-$8,727		5%-17%	
Highest			823		240		28		$18,787		49%	

*Approximately 50 percent of the programs fall within the moderate range on each measure.